

REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

Claims 1, 2, 9, and 17 through 26 are pending in the application with claims 3-8 and 10-16 having been canceled and claims 20-26 having been added. New claims 20-26 are supported in the application as originally filed by claims 3-6 and 10-12.

The specification has been amended by inserting the disclosure that the preferred pressure for the distillation process is less than 760 mm Hg. This disclosure is supported by claim 8 of the application as originally filed.

Claims 1, 2, 9, and 17-19 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Arhancet (U.S. Patent No. 5,907,071) in view of Higgins et al. (U.S. Patent No. 4,033,829).

Arhancet discloses the inhibition of the polymerization of vinyl aromatic monomers such as styrene by the addition of a composition of a stable hindered nitroxyl radical and an oxime compound.

The Examiner has stated:

"Arhancet discloses a method for inhibiting premature polymerization of vinyl aromatic monomers. The monomers are distilled in the presence of nitroxyl inhibitors (2,2,6,6-tetramethyl-1-piperidinoxy) at a temperature of 110° C *and under reduced vacuum*. The formula of the inhibitor of Arhancet is the same as the claimed formula. (See col. 1, lines 16-17; col. 2, line 10 through col. 3, line 7; claims 6 and 8)."
[Emphasis added]

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It is respectfully submitted that the Examiner is in error. Arhancet's runs were *not* made under reduced pressure. This is evident because examples 1 and 2 were run in a test tube capped with a rubber septum and examples 3 and 4 were run in a 250 mL three-necked flask fitted with a bubbler, a septa, and a condenser. No means for reducing pressure is disclosed. The only disclosure of reduced pressure in the reference is in the "Background of the Invention", which simply states that distillation of styrene is generally carried out under vacuum to minimize loss of monomer. However, there is no disclosure of what the temperature is when such distillations are carried out. The present claims require the combination of a temperature in the distillation means no higher than about 110° C and a pressure less than 760 mm Hg. This combination is not disclosed or suggested by Arhancet.

Higgins et al. disclose the inhibition of styrene polymerization during the distillation thereof by incorporating therein, in an amount sufficient to inhibit polymerization thereof, a *dinitrophenol* solution recovered from styrene still residues or tars resulting from the distillation of styrene in the presence of dinitrophenol. Higgins et al. fails to supplement the deficiencies of Arhancet as a reference.

As pointed out previously in the prosecution of this application, dinitrophenol is *not* a *nitroxyl-containing* compound and thus this patent provides no teaching of the difficulties encountered in using nitroxyl-containing compounds as inhibitors, nor does it suggest that problems involved in using nitroxyl-containing compounds as inhibitors can be overcome by recycling a stream *containing such inhibitors* at temperatures less than 110° C and at pressures below 760 mm Hg, as required by the present claims.

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The Examiner previously acknowledged that Higgins et al. do not specifically disclose that the product stream is recycled at a temperature no higher than about 110° C, but argued that they disclose that the product stream is processed at a temperature between about 70° C and 95° C and do not disclose that the recycled product stream is heated up before the recycling step and therefore took the position that the recycled product stream would be at a temperature no higher than about 110° C as claimed. The Examiner specifically relied on the disclosure at column 5 of the patent, at lines 36-44.

The cited disclosure, however, is directed to a step in the process that *follows* the distillation operation and is concerned with the purification of the dinitrophenol, as the Examiner has apparently realized. There is no reason to believe that such a temperature would be carried through to the distillation step that employs the recycled dinitrophenol. On the contrary, the patent teaches in column 4, at lines 38-41 that the *distillation column* was operated at an overhead pressure of 414 mm Hg which *resulted in a bottoms temperature of approximately 131° C*. This is precisely the kind of distillation temperature the present Applicants have taught is to be avoided.

Claim 1 requires that the temperature *in the distillation means* is the temperature that be no higher than about 110° C *and* that the pressure be below 760 mm Hg, *and* that a nitroxide inhibitor be present. These features are nowhere disclosed or suggested by Higgins et al.

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In the current Office Action, the Examiner has stated:

"The argument that Higgins does not teach the use of nitroxyl and does not suggest a stream containing nitroxyl-containing compound is recycled at temperature less than 110° C and at pressure below 760 mmHg is not persuasive because the examiner was replied [*sic*, has relied?] upon Higgins to teach that an inhibitor, which was separated from monomers, can be recycled back to previous distillation process for reuse. Arhancet already teaches the claimed temperature and pressure."

Thus, it is understood that Higgins et al. is cited solely to show that inhibitor recycling is known in the art. Applicants acknowledge that such recycling, per se, is known, but take the position that the combination of such recycling with the claimed temperature and pressure features is novel and unobvious. That Arhancet does not teach the claimed temperature and pressure has been pointed out above.

Accordingly, it is requested that the rejection of claims 1, 2, 9, and 17-19 under 35 U.S.C. 103(a) as being unpatentable over Arhancet et al. in view of Higgins et al. be withdrawn.

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In view of the foregoing, it is submitted that this application is now in condition for allowance and an early Office Action to that end is earnestly solicited.

Respectfully submitted,

29 Oct 04
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